IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants:	Alexander P. Moravsky et al.	**Examiner:**	Stuart L. Hendrickson
Serial No.:	09/680,291	**Art Unit:**	1793
Filed:	October 6, 2000	**Docket:**	21088/14311
For:	DOUBLE-WALLED CARBON NANOTUBES AND METHODS FOR PRODUCTION AND APPLICATION		

Confirmation No.: 9193

Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

DECLARATION OF ALEXANDER P. MORAVSKY

Sir:

I, Alexander P. Moravsky, hereby declare and state as follows:

1. I am one of the applicants of the above-identified application, and I have complete knowledge of all aspects of the application.

2. I am currently employed as Senior Scientist at MER Corporation, Tucson, Arizona, and have been so employed since 1999. Previous to that year, I assisted MER Corporation in Tucson, Arizona for several months in 1998 as a consultant. My employment history since 1975 is set forth in the Resume of Alexander P. Moravsky, attached hereto as Exhibit 1 and incorporated herein by reference and made a part hereof.

3. I am currently involved in fullerene and carbon nanotube materials synthesis and property studies, and have been so involved since 1991. I have extensive experience and many publications in this field, as set forth in my attached Resume in Exhibit 1.

4. I have earned Ph.D, M.Sc. and B.Sc. degrees in the fields of Chemistry, Physics and Molecular and Chemical Physics, all as set forth in my attached Resume in Exhibit 1.

5. The present application is directed to, *inter alia*, a solid substance comprised by more than one half by weight of hollow carbon nanotubes having walls consisting essentially of two layers of carbon atoms, said nanotubes consisting of two concentric nearly cylindrical graphene layers. It is also directed to, *inter alia*, to substantially pure double wall nanotubes, wherein the double-wall nanotubes have two concentric nearly cylindrical graphene layer.

6. I have been advised by counsel that the United States Patent and Trademark Office ("USPTO") has rejected Claims under 35 U.S.C. 103(a) as being unpatentable over an article by Flahaut et al. (Flahaut et al., J. Mater. Chem., 2000, 10, 249-252), further "Flahaut et al".

7. I have been advised by counsel that the Flahaut et al. article was published on January 27, 2000.

8. The present application was filed in the USPTO on October 6, 2000.

9. The invention described and claimed in the above-identified application was completed in the U.S. prior to January 27, 2000.

10. As evidence hereof, annexed hereto and made a part hereof are Exhibits 1-10. All of the acts described herein took place in either the Untied States or a NAFTA country other than the United States or a WTO member country prior to January 27, 2000, and were performed by myself or by scientists and/or technicians working under my direct supervision or control, except to the extent indicated herein. Data or information not pertinent to the invention and dates have been masked out in the preparation of their photocopies.

11. Attached hereto as Exhibit 2 is a copy of a notebook page, which outlines a synthesis for a product of the present invention. This outlines an arc discharge evaporation of a metal-graphite electrode, where the anode was a graphite rod (8.2 mm in diameter), having a

drilled channel of about 189 mm in length and 3.16 mm in diameter. The cathode was a graphite rod, which was positioned coaxially with the anode. The catalyst was prepared by heating nickel, cobalt and iron together with elemental sulfur. The resulting conglomerate was ground in a ball mill to a micron particle size and then intimately mixed with carbon powder. The channel drilled in the graphite rod was tightly filled with the mixture to obtain an anode containing 79.91% C, 10.26% Ni, 2.77% Co, 5.44% Fe and 1.62%S.

An arc discharge was carried out with an arc current of 81A at 350 Torr in an atmosphere of Argon (175 Torr) and hydrogen (175 Torr) (1:1). The voltage drop across the gap was 26-28 V, and the rod feed was 2 mm/min. The duration of the arc process was about 45 min.

The carbon material produced in the arc discharge was deposited on the walls of the reactor and on the electrodes wherefrom it was collected separately. A fibrous material (elastic web-like product) was collected from the cathode.

12. A SEM examination of the web-like products obtained from the process described in Paragraph 11 showed dominating amounts of curled fibers being present in the product.

13. Exhibit 3 is an example of a TEM image of the product obtained from the process described in Paragraph 11. As shown in Exhibit 3, unusually thick nanotubes of approximately 4 nm in diameter were observed, assembled in thin bundles containing a few tubes.

14. The image was quite different than the appearance of single walled nanotubes, commonly produced in arc discharge processes, whereby tubes are about 1.5 nm in diameter and the bundles contain some dozen tubes.

15. Further, the walls of the tubes in Fig. 3 are thicker than is observed for commonly produced SWNTs, which is consistent with the nanotubes having two walls.

16. TEM images made by an instrument with better resolution unambiguously show that the tubes produced by the process described hereinabove in paragraph 11 have a two-wall structure. The images are attached hereto as Exhibits 4-8. These images unambiguously show that the nanotubes have two concentric nearly cylindrical graphene layers.

17. Additional samples were prepared in accordance with the procedure outlined in Example 1.

18. Samples, which were prepared by me or under my direct supervision, in accordance with the procedure described in the underlying application, such as Example 1, were examined under HRTEM (High Resolution TEM) in Russia by my colleague, Dr. Krinichnaja. Attached as Exhibit 9 is an email message from Dr. Krinichnaja in Russian; Exhibit 10 is a translation thereof, which verifies that the sample which I provided to her and which she examined using TEM, consisted of double wall nanotubes, having diameters of 3.5 to 5.2 nm. Good quality HRTEM analysis of the samples produced prior to January 27, 2000 revealed that samples contained not only DWNTs as the dominant carbon product, and also that no SWNTs were detected.

19. As shown by all the data described herein, all of the experiments described herein produced a solid product comprised by more than one half by weight of hollow carbon nanotubes having walls consisting essentially of two layers of carbon atoms, consisting of two concentric nearly cylindrical graphene layers. The product produced was isolated and very pure double wall nanotubes, where the double wall nanotube have two nearly cylindrical graphene layers.

20. Thus, the acts described herein were completed prior to the January 27, 2000, the publication date of the Flahaut et al. article.

21. I further declare that all statements made herein of my knowledge are true and that all statements made on information and belief are believed to be true and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both under Section 1001 of Title 18 of the United States

Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Date: October 04, 2010

Alexander P. Moravsky

EXHIBIT 1

RESUME
ALEXANDER P. MORAVSKY

EDUCATION

Ph.D. Chemistry, Moscow Institute for Physics and Technology (MIPT), 1975
M.Sc. Physics of Fast Processes, MIPT, 1972
B.Sc. Molecular and Chemical Physics, MIPT, 1970

PROFESSIONAL EXPERIENCE

1998-Present MER Corporation, Senior Scientist, Tucson, AZ
1980-1998 Senior Research Fellow, Head of a Research Group, Institute of Problems of Chemical Physics, Chernogolovka, Russia
1979-1980 Post Doctorate of Prof. J.K.Stille, Colorado State Univ., Fort Collins, CO
1975-1979 Research Fellow, Institute of Chemical Physics, Chernogolovka, Russia

RECORD OF TECHNICAL ACHIEVEMENTS

- 11 Patents
- 240 papers in refereed journals
- 5 Reviews

INDUSTRIALLY IMPLEMENTED TECHNOLOGIES:

- technique for ketones and aldehydes micro-analysis
- methane absorption accumulators

AREAS OF TECHNICAL EXPERTISE

- R&D on advanced new materials, basic chemical technology, organic synthesis
- Catalysts, small molecule catalytic conversions of industrial interest
- Redox processes and fast reactions in solution and films
- Purification of substances, analytical chemistry
- Analysis of sophisticated chemical kinetic schemes
- Spectral analysis, NMR and ESR, XPS, GC, GC/MS, LC, HPLC
- Fullerene and nanocarbon materials science and technology

Dr. Moravsky A.P.
List of recent publications. 1993-2010.

1. "The Loss-Function of Solid C_{60}", Synthetic Metals, v.56, No 2-3, 2961-2966 (1993). V.I.Rubtsov, Yu.M.Shulga, A.S.Lobach, and A.P.Moravsky.

"Photophysical Properties of C_{60}. Picosecond Study of Intersystem Crossing", J.Photochem.Photobiol. A: Chem., v.70, No2, 153-156 (1993). V.A.Nadtochenko, I.V.Vasil'ev, N.N.Denisov, I.V.Rubtsov, A.S.Lobach, A.P.Moravskii, and A.F.Shestakov.

"Photophysical properties of C_{70}. Picosecond Laser Photolysis". Zh. Fiz.Khimii, N9, 1880-1883 (1993). I.V.Vasiliev, N.N.Denisov, I.V.Rubtsov, A.S.Lobach, V.A.Nadtochenko, and A.P.Moravskii.

"Photochemical Properties of C_{60}. Triplet Excited C_{60} Quenching by Electron Acceptors TCNQ and TCNE in Solution. Laser Photolysis Study", Chem.Phys.Letters, v.208, No5-6, 431-435 (1993), V.A.Nadtochenko, N.N.Denisov, I.V.Rubtsov, A.S.Lobach, and A.P.Moravskii.

"Triplet Excited C_{60} Quenching by TCNE in Benzonitrile Solution. Formation of the Ion-Radical Pair [C_{60}+...TCNE]", Russian Chemical Bulletin, v.42, N7, 1171-1173 (1993). V.A.Nadtochenko, N.N.Denisov, I.V.Rubtsov, A.S.Lobach, and A.P.Moravskii.

"Photophysical Properties of Fullerenes. Picosecond and Nanosecond Transient Absorption Spectra of C_{60} and C_{70}. New Bands in the Near IR." Fullerenes. The First Int. Interdisciplinary Colloquium on the Sci. and Tech. of Fullerenes, 1993, Santa Barbara, USA, Abstract, p.116. Nadtochenko V.A. et al.

"Photochemical Properties of C_{60}. Photooxidation of C_{60} by TCNE and TCNQ in Solutions. Laser Photolysis Study". Fullerenes. The First Int. Interdisciplinary Colloquium on the Sci. and Tech. of Fullerenes, 1993, Santa Barbara, USA, Abstract, p.192-194. Nadtochenko V.A. et al.

"Photophysical and Photochemical Properties of C_{60}. Picosecond and Nanosecond Laser Photolysis Study", International Workshop on Fullerenes and Atomic Clusters", 1993, St.Peterburg, Russia, p.29. Nadtochenko V.A. et al.

"On the Reaction of Buckminsterfullerene with Tetrabuthylammonium Tetrahydroborate", Russian Chemical Bulletin, N3, 803(1993). V.D.Makhaev, Yu.M.Shulga, A.S.Lobach, V.N.Vasilets, O.S.Roshchupkina, and A.P.Moravsky.

10. "Reaction of Organic Cation Tetrahydroboronates with Fullerene C_{60}", Int. Conference "Physics and Chemistry of Fullerenes", Greece, 1993, Abstracts, p.34. V.D.Makhaev, A.S.Lobach, Yu.M Shulga. O.S.Roschupkina, and A.P.Moravsky.

"Interaction of Methane with Acetylene in the Presence of Ziegler-Natta Type Catalysts", Neftekhimiya, v.32, N4, 324-330 (1992). E.M.Efimova, A.P.Moravskii, and N.F.Noskova.

"Characteristic Loss Spectrum, Accompanying the C_{1s} Photoelectron Peak of Fullerene C_{60}", JETP Letters, v.55, No.2, 132-135 (1992), Yu.M.Shulga, A.P.Moravsky, A.S.Lobach, and V.I.Rubtsov.

"Study of the Single-Fold Electron Energy Losses Spectra of Individual Fullerenes C_{60} and C_{70} and of "Graphite-like materials", Doklady Akad.Nauk., v.325, N4, 779-781 (1992). Yu.M.Shulga, A.P.Moravsky, A.S.Lobach, and V.I.Rubtsov.

" First-Order Phase Transition with a Large Change in Volume in the Fullerene C_{60} Under Pressure", JETP Lett, v.59, N4, 279-282 (1994). I.O. Bashkin, V.I.Rashchupkin, N.P.Kobelev, A.P.Moravskii, Ya.M.Soifer, and E.G.Ponyatovskii.

"Reactions of Hydrocarbons with Electrophylic Transition Metal Complexes in Trifluoroacetic Acid Media", Uspekhi Khimii, v.63, N2, 130-144 (1994). N.F.Goldshleger, and A.P.Moravskii.

"Orientational Rotation of C_{60} Molecules in Different Solutions", JETP Letters, v.60, No5, 320-325 (1994). I.V.Rubtsov, D.V.Khudyakov, V.A.Nadtochenko, A.S.Lobach, and A.P.Moravskii.

"Quenching of Triplet-Excited Fullerene C_{60} by TCQM in Solutions", Zh.Fiz.Khimii, v.68, N2, 228-231 (1994). V.A.Nadtochenko, N.N.Denisov, A.S.Lobach, and A.P.Moravskii.

"Interaction of Fullerene C_{60} with 3-Amino-1-Propanol", Russian Chemical Bulletin, N6, 1143 (1996). N.F.Goldshleger, A.S.Lobach, A.S.Astakhova, M.G.Kaplunov, A.V.Kulikov, A.P.Moravskii, O.S.Roshchupkina, and Yu.M.Shulga.

"Synthesis of Organic Ferromagnetics by Pyrolysis of Conducting Polymers", Int.Conf.Synthetic Metals, Korea, 488 (1994), B.Z.Lubentsov, A.P.Moravsky, T.M.Moravskaya, and G.I.Zvereva.

20. "A New Phase Transition in the T-P Diagram of C_{60} Fullerite", J.Phys.: Condens. Matter, v.6, 7491-7498 (1994), I.O.Bashkin, V.I.Rashchupkin, A.F.Gurov, A.P.Moravsky, O.G.Rybchenko, N.P.Kobelev, Ya.M.Soifer, and E.G.Ponyatovsky.

"Acoustic Properties of Fullerene Compacts", Molecular Materials, v.4, 139-141 (1994), I.O.Bashkin, N.P.Kobelev, Ya.M.Soifer, and A.P.Moravsky.

"Dissipative Properties of Fullerene-C_{60}", Int.Workshop Fullerenes and Atomic Clusters, 54 (1994), I.O.Bashkin, N.P.Kobelev, A.P.Moravsky, and Ya.M.Soifer.

"Photophysical and Photochemical Properties of C_{60} and C_{70}. Intersystem Crossing in Solutions. Photooxidation of T_1-excited C_{60} by Electron Acceptors in Solutions", Molecular Materials, v.4, No1-3, 95-103 (1994), V.A. Nadtochenko, N.N. Denisov, I.V.Vasilev, I.V.Rubtsov, A.S.Lobach, and A.P.Moravsky.

"The Picosecond and Nanosecond Laser Photolysis Techniques Study of Photophysical and Photochemical Properties of Fullerenes", Int.Workshop Fullerenes and Atomic Clusters, 54 (1994), V.A.Nadtochenko, I.V.Vasiliev, I.V.Rubtsov, A.S.Lobach, and A.P.Moravsky.

"Rotational Reorientation Dynamics of C_{60} in Various Solvents. Picosecond Transient Grating Experiments", In "Fullerenes. Recent Advances in the Chemistry and Physics of Fullerenes and Related Materials", eds. K.M.Kadish, R.S.Ruoff. The Electrochemical Society, Pennington, New Jersey, 1994, p.1619 -1627, I.V.Rubtsov, D.V.Khudiakov, V.A.Nadtochenko, A.S.Lobach, and A.P.Moravsky.

"External Heavy Atom Effect on the Intersystem Crossing of Fullerenes. Picosecond Laser Photolysis Study". In " Fullerenes. Recent Advances in the Chemistry and Physics of Fullerenes and Related Materials", eds. K.M.Kadish, R.S.Ruoff. The Electrochemical Society, Pennington, New Jersey, 1994, p.1658-1669, V.A.Nadtochenko, I.V.Vasilev, N.N.Denisov, I.V.Rubtsov, A.S.Lobach, and A.P.Moravsky.

"Rotational Reorientation Dynamics of C_{60} in Various Solvents. Picosecond Transient Grating Experiments", Chem.Phys.Lett., v.229, Nos 4 and 5, 517 (1994), I.V.Rubtsov, D.V.Khudiakov, V.A.Nadtochenko, A.S.Lobach, and A.P.Moravsky.

"Reduction of Fullerene C_{60} with 3-Amino-1-Propanol", Molecular Materials, v.4, N1-3, 185-186 (1994), N.F.Goldshleger, A.S.Lobach, M.G.Kaplunov, A.V.Kulikov, A.P.Moravsky, O.S.Roshchupkina, and Yu.M.Shulga.

"Investigation of Fullerenes C_{60}, C_{70} Reduction in Neat Primary Amines", MRS Fall Meeting, Abstracts, Boston, USA, G5.42 (1994). A.S.Lobach, N.F.Goldshleger, M.G.Kaplunov, A.V.Kulikov, and A.P.Moravsky.

30. "Interaction of Fullerene C_{60} with 3-Amino-1-Propanol", IW Fullerenes and Atomic Clusters, 73 (1994), N.F.Goldshleger, A.S.Lobach, M.G. Kaplunov, A.P.Moravsky,O.S.Roshchupkina, Yu.M.Shulga, and A.V.Kulikov.

"Elastic and Dissipative Properties of Fullerite", Solid State Physics, v.36, N9, 2732-2737 (1994). N.P.Kobelev, A.P.Moravsky, Ya.M.Soifer, I.O.Bashkin,. and O.G.Rybchenko.

"Internal Friction and Sound Wave Velocities in Pure C_{60} Fullerite", Physica Status Solidi, B - Basic Research, 190:1, 157-162 (1995) N.P.Kobelev, Ya.M.Soifer, I.O.Bashkin, A.F.Gurov, A.P.Moravsky, and O.G.Rybchenko.

"Method of Determination of Fe-Protein Concentration in the Solution and its Application in the Study of the Kinetics of Nitrogenase Reaction". Biokhimiya, v.60, 1512-1520. S.Yu.Druzhinin, L.A.Syrtsova, A.V.Khramov, A.P.Moravskii, and N.I.Shkondina.

"Fullerene C_{60} Orientational Dynamics Study in Different Solvents by Picosecond Non-Stationary Grating Technique". Khimicheskaya Fizika, v.14, N14,96-104 (1995). I.V.Rubtsov, D.V.Khudyakov, V.A.Nadtochenko, A.S.Lobach, and A.P.Moravskii.

"UV-vis Photometric Analysis of Fullerenes C_{60} and C_{70} in Toluene and Hexane Solutions", in: Fullerenes. Recent Advances in the Chemistry and Physics of Fullerenes and Related Materials, v.2, Ed. K.M.Kadish and R.S.Ruoff, 1995, pp.156-169. A.P.Moravsky, P.V.Fursikov, L.M.Kachapina, A.V.Khramov, and N.V.Kiryakov.

"A Nearly Orthorhombic Phase of C_{60}. Properties and the Stability Region in the T-P Diagram", in: Fullerenes. Recent Advances in the Chemistry and Physics of Fullerenes and Related Materials, v.2, Ed. K.M.Kadish and R.S.Ruoff, 1995, pp.952-963. A.P.Moravsky, G.E.Abrosimova, I.O.Bashkin, R.A.Dilanian, A.F.Gurov, N.P.Kobelev, V.I.Rashchupkin, O.G.Rybchenko, Ya.M.Soifer, V.Sh.Shekhtman, and E.G.Ponyatovsky.

"A Study of Rotational Mobility of C_{60} Molecules in Different Solutions by the Induced Grating Technique", Chem.Phys.Reports, 1995, v.14, N 4, 490-502. I.V.Rubtsov, D.V.Khudyakov, V.A.Nadtochenko, A.S.Lobach, and A.P.Moravskii.

"Vibrational Spectroscopic Study of a New Polymeric C_{60} Phase", Materials Research Society 1995 Fall Meeting, Abstracts, 1995, FF10.4, p.170, A.M.Rao, P.C.Eklund, I.O.Bashkin, E.G.Ponyatovsky, and A.P.Moravsky.

"Photoluminescence Studies of a New Polymeric C_{60} Phase", Materials Research Society 1995 Fall Meeting, Abstracts, 1995, FF12.2, p.171, U.D.Venkateswaran, A.M.Rao, P.C.Eklund, I.O.Bashkin, E.G.Ponyatovsky, and A.P.Moravsky.

40. "Method for Assay of Fe-Protein Concentration and its Application in the Study of Nitrogenase Reaction Kinetics", Biochemistry, v.60, N9, pp.1153-1158 (1995), S.Yu.Druzhinin, L.A.Syrtsova, A.V.Khramov, A.P.Moravsky, and N.A.Shkondina.

"Photostimulation of Nitrogenase Reaction in Vitro for Investigation of Nitrogenase Mechanism Action", in: "Nitrogen Fixation: Fundamentals and Applications". Proceedings of the 10-th Int. Congress on Nitrogen Fixation, St.Peterburg, eds. Tikhonovich I.A.,

Provorov N.A., Romanov V.I., Newton W.E., Kluwer Academic Publishers, the Netherlands, 1995, pp.97-102, S.Yu.Druzhinin, L.A.Syrtsova, A.V.Khramov, and A.P.Moravsky.

"Internal Friction and Elastic Properties of a New Pressure-Induced Phase of C_{60} Fullerite", Int.Workshop Fullerenes and Atomic Clusters, 1995, p.29, N.P.Kobelev, Ya.M.Soifer, I.O.Bashkin, A.P.Moravsky, and E.G.Ponyatovsky.

"On the Optimal Conditions for Fullerene Production in Direct Current Arc", Int. Workshop Fullerenes and Atomic Clusters, Abstracts, St.Peterburg, 1995, p.39-40. A.P.Moravsky, P.V.Fursikov.

"Preparation and Single Crystal Structure Determination of the Intercalate C_{60}/TMPD", IW Fullerenes and Atomic Clusters, 1995, p.53-54, V.A.Nadtochenko, A.P.Moravsky, V.V.Gritsenko, G.V.Shilov, and O.A.Dyachenko.

"Properties of Materials Encapsulated into Carbon Nanotubes", Int.Workshop Fullerenes and Atomic Clusters, 1995, p.64-65, A.F.Gurov, A.S.Aronin, I.O.Bashkin, A.P.Moravsky, V.E.Muradyan, V.M.Teplinsky, and E.G.Ponyatovsky.

"Picosecond Dynamics of Charge Recombination in EDA Complexes between C_{60}, C_{70} and ternary Amines", IW Fullerenes and Atomic Clusters, 1995, p.109-110, N.N.Denisov, I.V.Rubtsov, A.S.Lobach, A.P.Moravsky, and V.A.Nadtochenko.

"UV-VIS Molar Absorption Coefficients for C_{60} and C_{70} in Toluene and Hexane", IW Fullerenes and Atomic Clusters, 1995, p.111-112, A.P.Moravsky, P.V.Fursikov, A.V.Khramov, and N.V.Kiryakov.

"IR Spectroscopy of C_{60}/TMPD and C_{60}/TPA Single Crystals. Photoinduced Absorption in Crystals of C_{60} with tertiary Amines", IW Fullerenes and Atomic Clusters, 1995, p.120-121, A.V.Bazhenov, T.N.Fursova, A.P.Moravsky, and V.A.Nadtochenko.

"A High-Pressure Study of Phase Transformations in C_{60} Fullerite", IW Fullerenes and Atomic Clusters, 1995, p.125-126, I.O.Bashkin, A.F.Gurov, A.P.Moravsky, V.I.Rashchupkin, and E.G.Ponyatovsky.

50. "Investigation of Fullerenes C_{60}, C_{70} Reduction in Neat Primary Amines", IW Fullerenes and Atomic Clusters, 1995, p.155-156, A.S.Lobach, N.F.Goldshleger, M.G.Kaplunov, A.V.Kulikov, and A.P.Moravsky.

"Statistical Processing of the Spectra of Fullerene Black Extracts: The Constancy of the C_{60}/C_{70} Ratio". Doklady Chemistry, v.351, Nos.1-3, pp.298-300 (1996). A.G.Ryabenko, A.A.Ryabenko, A.P.Moravskii, and P.V.Fursikov.

"X-Ray Diffraction Study of a High Pressure Phase of Fullerite C_{60}". Poverkhnost, N7, 79-81 (1996). G.E.Abrosimova, I.O.Bashkin, R.A.Dilanian, A.P.Moravskii, E.G.Ponyatovskii, O.G.Rybchenko, and V.Sh.Shekhtman.

"Reactions of Fullerenes with Deuterium in the Presence of Palladium", Russian Chemical Bulletin, v.45, No.7, 1778-79 (1996). B.P.Tarasov, V.N.Fokin, A.P.Moravsky, and Yu.M.Shulga.

"Spectrum of Optical Phonons and Low-Energy Electron Transitions in Single Crystals of C_{60}/tetramethyl- p-phenylenediamine and C_{60}/triphenylamine", Russian Chemical Bulletin, v.45, No.6, 1388-1392 (1996). A.V.Bazhenov, M.Yu.Maksimyuk, T.N.Fursova, A.P.Moravsky, and V.A.Nadtochenko.

"Synthesis of a C_{60}/TMPD Complex and its Crystal Structure", Russian Chemical Bulletin, v.45, No.5, 1224-1225 (1996). V.A.Nadtochenko, V.V.Gritsenko, O.A.Dyachenko, G.V.Shilov, and A.P.Moravsky.

"Molecular and Crystal Structure of a Charge-Transfer Complex C_{60}/TNPD" Zh.Fiz.Khimii, 1996. V.A.Nadtochenko, V.V.Gritsenko, O.A.Dyachenko, G.V.Shilov, and A.P.Moravskii.

"Orientational Dynamics of C_{70} Molecules in Chlorobenzene", Russian Chemical Bulletin, v.45, No.3, 560-563 (1996). D.V.Khudyakov, I.V.Rubtsov, V.A.Nadtochenko, and A.P.Moravsky.

"Charge-Transfer Complexes of Fullerene C_{70} and Ternary Amines in Chlorobenzene. Picosecond Dynamics of Charge Recombination", Russian Chemical Bulletin, v.45, No.5, 1091-1098 (1996). V.A.Nadtochenko, N.N.Denisov, I.V.Rubtsov, and A.P.Moravsky.

"UV-vis Molar Absorption Coefficients for Fullerenes C_{60} and C_{70}", Molecular Materials, v.7, 241-246 (1996). A.P.Moravsky, P.V.Fursikov, N.V.Kiryakov, and A.G.Ryabenko.

60. "High-Pressure Study of Phase Transformations in C_{60} Fullerite", Molecular Materials, v.7, No.1-4, 271-276 (1996). I.O.Bashkin, A.F.Gurov, V.I.Rashchupkin, E.G.Ponyatovsky and A.P.Moravsky.

"Internal Friction and Elastic Properies of a New Pressure-Induced Phase of C_{60} Fullerite", Molecular Materials, v.7, No.1-4, 261-266 (1996). N.P.Kobelev, Ya.M.Soifer, I.O.Bashkin, A.P.Moravsky and E.G. Ponyatovsky.

"Preparation and Single Crystal Structure Determination of the C_{60}/TMPD Electron Donor-Acceptor Complex", Molecular Materials, v.7, No.1-4, 103-104 (1996). V.A.Nadtochenko, A.P.Moravskii, V.V.Gritsenko, G.V.Shilov, and O.A.Dyachenko.

"Nitrogenase Component Stoichiometry and the Possibility of Nitrogenase Dissociation as Studied by Stopped-Flow Spectrometry", Biochemistry (USA), 1996, S.Yu.Druzhinin, L.A.Syrtsova, A.V.Khramov, A.P.Moravsky, and N.A.Shkondina.

"Raman and Infrared Studies of Pressure-Polymerized C_{60}", The 12th Yokohama 21th Century Forum, Ext.Abstr., 1996, p.52-61. A.M.Rao, P.C.Eklund, J-L.Hodeau, L.Marques, M.Nunez-Regueiro, J.Tucker, M.A.Duncan, I.O.Bashkin, E.G.Ponyatovsky, and A.P.Moravsky.

"Synthesis of Fullerene and Alkaline Earth Hydrides at Mild Pressure-Temperature Conditions", Abstracts Book of Int.Symp. on Metal Hydrogen Systems, Switzerland, 1996, M1-19. B.P.Tarasov, V.N.Fokin, E.E.Fokina, S.P.Shilkin, A.P.Moravsky, Yu.M.Shulga, and V.A.Yartys.

"Optimization of the Arc Synthesis of Fullerenes", 189th Meeting of The Electrochemical Society Inc., Ext.Abstr., Fullerenes S1, Los Angeles, 1996, p.112. A.Moravsky, P.Fursikov, A.Krestinin, and A.Ryabenko.

"Magnetic Properties of Polyaniline", Int.Conf. Sci.Tech.Synth.Metals ICSM'96, Abstracts, Snowbird, Utah, 1996, p.37. B.Z.Lubentsov, A.P.Moravsky, G.I.Zvereva, O.V.Bochkova, V.N.Spector, and A.A.Ovchinnikov.

"Production, Purification and Filling of Carbon Nanotubes", IX-th Trilateral Seminar on Superconductivity, Abstracts, Ilmenau, Germany, (1996), p.57-59. A.Gurov, A.Moravsky, R.Oganian, A.Aronin, and I.Bashkin.

"Neutron Spectroscopy of C_{60}Hx Quenched under Hydrogen Pressure", Proc.First European Conf. on Neutron Scattering (ECNS'96), 1996, Interlaken, Switzerland, p.74-82. A.I.Kolesnikov, V.E.Antonov, I.O.Bashkin, E.G.Ponyatovsky, A.Yu.Muzychka, A.P.Moravsky, G.Grosse and F.E.Wagner.

70. "Neutron Scattering Study of a High-Pressure Polymeric C_{60} Phase", J.Phys.: Condensed Matter, v.8, 10939-10949 (1996), A.I.Kolesnikov, I.O.Bashkin, A.P.Moravsky, M.A.Adams, M.Prager, and E.G.Ponyatovsky.

"Orientational Behavior of C_{70} Molecules in Chlorobenzene", Chem.Phys.Letters, v.249, Nos.1 and 2, 101-105 (1996), I.V.Rubtsov, D.V.Khudyakov, A.P.Moravsky, and V.A.Nadtochenko.

"Elastic and Dissipative Properties of Solid C_{60}", J.de Physique, A58, 3431-3434 (1996). Yu.M.Soifer, N.P.Kobelev, I.O.Bashkin, A.P.Moravsky and E.G.Ponyatovsky.

"Fullerene Hydrides: Synthesis, Properties and Structure", Russian Chemical Reviews, V.66, No.4, 323-342 (1997). N.F.Goldshleger, A.P.Moravsky.

"Activation of Methane over Fullerene Black", Neftekhimiya, v.37, N2, pp.117-123 (1997). S.D.Kushch, A.P.Moravskii, V.E.Muradian, and P.V.Fursikov.

"Electrochemical Polymerization of Fullerene C_{60}", Russian Chemical Bulletin, V.46, No.4, 830-831 (1997). A.P.Moravskii, I.O.Bashkin, O.N.Efimov, E.P.Krinichnaya, E.G.Ponyatovskii, and V.V.Strelets.

"Conversions in the System Fullerene-Intermetallics-Hydrogen", Zh.neorg.khimii, v.42, N6, 920-922 (1997) B.P.Tarasov, V,N,Fokin, A.P.Moravskii, and Yu.M.Shulga.

"Hydrogenation of Fullerites in the Presence of Intermetallic Compounds or Metals", Russian Chemical Bulletin, v.46, No.4, 649-652 (1997). B.P.Tarasov, V.N.Fokin, A.P.Moravskii, and Yu.M.Shulga.

"Magnetic Properties of Polyaniline", Doklady Chemistry, v.354, N5, 635-537 (1997). G.I.Zvereva, B.Z.Lubentsov, A.P.Moravskii, O.V.Bochkova, V.N.Spector, and A.A.Ovchinnikov.

"Properties of C_{60} Polymerized Under High Pressure and Temperature", Applied Phys.A 64, N4, 231-239 (1997). A.M.Rao, P.C.Eklund, U.D.Venkateswaran, J.Tucker, M.A.Duncan, G.Bendele, P.W.Stephens, J.-L.Hodeau, L.Marques, M.Nunez-Regueiro, I.O.Bashkin, E.G.Ponyatovsky, and A.P.Moravsky.

80. "Photoluminescence of Solid C_{60} Polymerized Under High Pressure", Chem.Phys.Lett., 272, 32-37 (1997). I.O.Bashkin, A.N.Izotov, A.P.Moravsky, V.D.Negrii, R.K.Nikolaev, Yu.A.Ossipyan, E.G.Ponyatovsky and E.A.Steinman.

"Neutron Spectroscopy of C_{60} Fullerite Hydrogenated under High Pressure; Evidence for Interstitial Molecular Hydrogen", J. Phys.: Condensed Matter, v.9, 2831-2838 (1997). A.I.Kolesnikov, V.E.Antonov, I.O.Bashkin, G.Grosse, A.P.Moravsky, A.Yu.Muzychka, E.G.Ponyatovsky and F.E.Wagner.

"Neutron Spectroscopy of C_{60}Hx Quenched under Hydrogen Pressure", Physica B: Condensed Matter, v.234-236, 10-12 (1997). A.I.Kolesnikov, V.E.Antonov, I.O.Bashkin, E.G.Ponyatovsky, A.Yu.Muzychka, A.P.Moravsky, G.Grosse, and F.E.Wagner.

"Hydrogenation of Fullerenes C_{60} and C_{70} in the Presence of Hydride Forming Metals and Intermetallic Compounds", Journal of Alloys & Compounds, v.253-254, 25-28 (1997). B.P.Tarasov, V.N.Fokin, A.P.Moravsky, Yu.M.Shulga, and V.A.Yartys.

"A SEM Study of the Internal Structure of Cathode Deposits Containing Different Types of Carbon Nanotubes", 10th Russian Simp.SEM and Analyt.Techniques for Solid State Studies, Abstract, Chernogolovka, 1997, 82-83, A.P.Moravskii, A.B.Ormont.

"Kinetics of Fullerene Formation in Arc Reactor", 3rd Int.Workshop Fullerenes & Atomic Clusters, St.Petersburg, Russia, Book of Abstracts, 1997, p.16. A.V.Krestinin, A.P.Moravsky.

"Vibrational Spectra of C_{60} Hydrofullerite Prepared Under High Hydrogen Pressure", 3rd Int.Workshop Fullerenes & Atomic Clusters, St.Petersburg, Russia, Book of Abstracts, 1997, p.22. I.O.Bashkin, A.I.Kolesnikov, V.E.Antonov, G.Grosse, A.P.Moravsky, A.Yu.Muzychka, F.E.Wagner, and E.G.Ponyatovsky.

"Carbon Arc in Helium Produces Exactly 5 Molecules of C_{60} per one of C_{70}", 3rd Int.Workshop Fullerenes & Atomic Clusters, St.Petersburg, Russia, Book of Abstracts, 1997, p.64. A.P.Moravsky, A.G.Ryabenko, A.A.Ryabenko, and P.V.Fursikov.

"Vibrational Spectrum of a C_{60} High-Pressure Polymer", 3rd Int.Workshop Fullerenes & Atomic Clusters, St.Petersburg, Russia, Book of Abstracts, 1997, p.75. I.O.Bashkin, A.I.Kolesnikov, M.A.Adams, A.P.Moravsky, M.Prager, and E.G.Ponyatovsky.

"Photoluminescence of C_{60} Crystals Polymerized under High Pressure", 3rd Int.Workshop Fullerenes & Atomic Clusters, St.Petersburg, Russia, Book of Abstracts, 1997, p.76. I.O.Bashkin, A.N.Izotov, A.P.Moravsky, V.D.Negrii, R.K.Nikolaev, Yu.A.Ossipyan, E.G.Ponyatovsky, and E.A.Steinman.

90. "Cathode Polymerization of Solid Films of Fullerene C_{60}", 3rd Int.Workshop Fullerenes & Atomic Clusters, St.Petersburg, Russia, Book of Abstracts, 1997, p.82. A.P.Moravsky, I.O.Bashkin, O.N.Efimov, E.P.Krinichnaya, E.G.Ponyatovsky, and V.V.Strelets.

"Carbide Formation in the System Fullerene-Metal (Intermetallic Compound)-Hydrogen", 3rd Int.Workshop Fullerenes & Atomic Clusters, St.Petersburg, Russia, Book of Abstracts, 1997, p.128. B.P.Tarasov, V.N.Fokin, A.P.Moravsky, and Yu.M.Shulga.

"Hydrogenation of Solid Compositions of Fullerenes with Metals or Intermetallics", 3rd Int.Workshop Fullerenes & Atomic Clusters, St.Petersburg, Russia, Book of Abstracts, 1997, p.152. B.P.Tarasov, V.N.Fokin, A.P.Moravsky, Yu.M.Shulga, and V.A.Yartys.

"Curie Point of Nickel Encapsulated in Carbon Nanotubes", 3rd Int.Workshop Fullerenes & Atomic Clusters, St.Petersburg, Russia, Book of Abstracts, 1997, p.168. A.F.Gurov, A.S.Aronin, A.P.Moravsky, and A.D.Styrkas.

"Electrochemical Behavior of Polymer Compositions Containing Fullerenes or Nanotubes", 3rd Int.Workshop Fullerenes & Atomic Clusters, St.Petersburg, Russia, Book of Abstracts, 1997, p.259. L.M.Zemtsov, G.P.Karpacheva, V.V.Kozlov, E.P.Krinichnaya, O.N.Efimov, A.P.Moravsky.

"Fullerenes and Soot as Catalyst Supports in Propylene Polymerization", 3rd Int.Workshop Fullerenes & Atomic Clusters, St.Petersburg, Russia, Book of Abstracts, 1997, p.295. N.M.Galashina, A.N.Klyamkina, N.J.Kovalyova, A.P.Moravsky and G.A.Vinogradov.

"Fullerene-Based Catalysts for Methane Dehydrogenation", 3rd Int.Workshop Fullerenes & Atomic Clusters, St.Petersburg, Russia, Book of Abstracts, 1997, p.298. S.D.Kushch, E.I.Knerelman, E.M.Koldasheva, V.L.Kuznetsov, V.E.Muradyan, P.V.Fursikov, A.V.Khramov, A.P.Khrushch, and A.P.Moravsky.

"Mechanism of Fullerene Synthesis in the Arc Reactor", Chemical Physics Letters, V.286, N 5/6, p.479-485 (1998),. A.V.Krestinin, A.P.Moravsky.

"On the Role of Carbon-Containing Supports in the Stereospecific Propylene Polymerization", Polymery, V.43, No.1, p.24-27 (1998). N.M.Galashina, A.N..Klyamkina, N.Yu.Lobanova, G.A.Vinogradov, and A.P Moravsky.

"Application of Fullerenes as Catalysts in Chemical Industry", 1st Int.Workshop "Results of Fundamental Research for Investments", S.-Petersburg, Abstr. Invited Lectures, 1998, p.14. A.P.Moravsky.

100. "Modelling the Arc Reactor Process of Fullerene Synthesis", Molecular Materials, v.10, 65-70 (1998). A.V.Krestinin, A.P.Moravsky.

"An Invariant of Carbon Arc Synthesis of Fullerenes", Fullerene Science and Technology, v.6, N3, 453-467 (1998). A.P.Moravsky, A.G.Ryabenko, P.V.Fursikov, and A.A.Ryabenko.

"Composition of Toluene Extracts of Carbon Arc Generated Fullerene Soots", Molecular Materials, v.10, .87-92 (1998). A.P.Moravsky, A.G.Ryabenko, P.V.Fursikov, and A.A.Ryabenko.

"Electrochemical Properties of Pyrolised Compositions of Polyacrylonitrile and Fullerenes", Journal of Physics and Chemistry of Solids, 1998. G.P.Karpacheva, L.M.Zemtsov, V.V.Kozlov, O.N.Efimov, E.P.Krinichnaya, and A.P.Moravsky.

"The Synthesis and Study of Composites Based on Thermostructured Polyacrylonitrile and Fullerenes", Molecular Materials, v.10, 112-114 (1998). G.P.Karpacheva, L.M.Zemtsov, Yu.M.Shulga, O.N.Efimov, E.P.Krinichnaya, A.P.Moravsky, and V.V.Kozlov.

"Electrochemical Behavior of Polymer Compositions Containing Fullerenes or Nanotubes", Molecular Materials, v.11, 107-110 (1998). L.M.Zemtsov, G.P.Karpacheva, V.V.Kozlov, E.P.Krinichnaya, O.N.Efimov, and A.P.Moravsky.

"Spectrophotometric Determination of the Yield of the C_{60} and C_{70} Fullerenes in Electric Arc Synthesis in Helium", Journal of Analytical Chemistry, v.53, No.12, 1135-1142 (1998), A.P.Moravskii, A.A.Ryabenko, A.G.Ryabenko, and P.V.Fursikov.

"A Kinetic Model of Formation of Fullerenes C_{60} and C_{70} in Condensation of Carbon Vapor", Chemical Physics Reports, v.17, No.9, pp.1687-1707 (1998). A.V.Krestinin, A.P.Moravskii, and P.A.Tesner.

"Kinetics of Fullerene C_{60} and C_{70} Formation in a Reactor with Graphite Rods Evaporated in Electric Arc, Chemical Physics Reports, v.18, No.3, pp.515-532 (1999). A.V.Krestinin, A.P.Moravskii.

"Promotion of Fullerene Hydride Synthesis by Intermetallic Compounds". Hydrogen Energy Progress XII. Proc. 12th World Hydrogen Energy Conf.. Buenos Aires, Argentina. 1998, v..2, 1221-1230. B.P.Tarasov, V.N.Fokin, A.P.Moravsky, Yu.M.Shulga, V.A.Yartys, and D.V.Schur.

110. "Synthesis of Fullerene Hydrides by Hydrogenation of Fullerite with Hydrogen Evolved from Hydrides of Intermetallic Compounds", Zh.obshch.khimii, v.68, N10, p.1585 (1998). B.P.Tarasov, V.N.Fokin, E.E.Fokina, Z.A.Rumynskaya, L.S.Volkova, A.P.Moravskii, Yu.M.Shulga.

"Synthesis of Crystalline Fullerene Hydrides". Russ. Chem. Bull., N10, .2093-2096 (1998). B.P.Tarasov, V.N.Fokin, A.P.Moravsky, Yu.M.Shulga.

"Synthesis And Properties of Crystalline Fullerene Hydrides", NANO-98 (4th Int. Conf. on Nanostructured Materials, Stockholm, Sweden, p.27(1998). B.P.Tarasov, V.N.Fokin, A.P.Moravsky, Yu.M.Shulga, V.A.Yartys, and D.V.Schur.

"Hydrogen Sorption-Desorption in Fullerene-Metal(Intermetallics) Systems". XII Int.Symp. Metal Hydrogen Systems: Fundamentals & Applications (ICHU'98), Hangzhou, China. : Abstracts. 1998, A4:14-P. B.P.Tarasov, V.N.Fokin, A.P.Moravsky, Yu.M.Shulga, D.V.Schur, and V.A.Yartys.

"Study of Fullerene-Metals-Hydrogen and Fullerene-Hydrogen Systems". 1998 Autumn Meeting SF2M Metal Hydrides, Paris, Abstracts. 1998, p.31. B.P.Tarasov, V.N.Fokin, A.P.Moravsky, Yu.M.Shulga, V.A.Yartys, and D.V.Schur.

"Fullerene Hydrides: Synthesis and Properties". II Int.Conf."Hydrogen treatment of metals" (HTM-2), Donetsk, Abstracts, p.34 (1998). B.P.Tarasov, V.N.Fokin, E.E.Fokina, Z.A.Rumynskaya, L.S.Volkova, A.P.Moravskii, and Yu.M.Shulga.

"Electrochemical Polymerisation of Fullerene C_{60}", ICSM'98, Abstracts, France, p.45, 1998. E.P.Krinichnaya, L.I.Tkachenko, O.N.Efimov, A.P.Moravskii, and V.V.Strelets.

"Soot Aerosol and Fullerene Formation in Carbon Vapor Condensation Process", 4th Int.Symp.Aerosol Soc., S.Petersburg, Abstracts, p32, 1998. A.V.Krestinin, A.P.Moravsky, P.A.Tesner, and P.V.Fursikov.

"Vibrational Spectra of C_{60} Hydrofullerite Prepared Under High Hydrogen Pressure", Molecular Materials, v.10, 265-268(1998), I.O.Bashkin, A.I.Kolesnikov, V.E.Antonov, E.G.Ponyatovsky, A.P.Kobzev, A.Yu.Muzychka, A.P.Moravsky, F.E.Wagner, and G.Grosse.

"Interaction of Platinum Fulleride C_{60}Pt with Deuterium Gas". Russian Chemical Bulletin, v.48, No.5, 999 (1999). N.F.Goldshleger, B.P.Tarasov, Yu.M.Shulga, A.A.Perov, O.S.Roshchupkina, and A.P.Moravskii.

120. "Interaction of Platinum Fulleride C_{60}Pt with Deuterium: IR and XPS Studies", In: "Fullerenes. Recent Advances in the Chemistry and Physics of Fullerenes and Related Materials", v.7, eds. K.M.Kadish, P.V.Kamat and D.M.Guldi. The Electrochemical Society, Pennington, NJ, 1999, p.647. N.F.Goldshleger, B.P.Tarasov, Yu.M.Shulga, O.S.Roshchupkina, A.A.Perov, and A.P.Moravsky.

"Layered Materials by Electron Transfer Induced Deposition of Fullerene C_{60}", In: "Fullerenes. Recent Advances in the Chemistry and Physics of Fullerenes and Related Materials", v.7, eds. K.M.Kadish, P.V.Kamat and D.M.Guldi. The Electrochemical Society, Pennington, NJ, 1999, p.444-449. Yu.A.Dubitsky, O.N.Efimov, Yu.V.Korneenkov, E.P.Krinichnaya, A.S.Lobach, A.P.Moravskii, V.V.Strelets, L.I.Tkachenko, and A.Zaopo.

"SEM and HREM Study of Nanotube Rich Carbon Arc Cathode Deposits Internal Structure", Carbon, v.37, pp.1093-1103 (1999). N.A.Kiselev, A.P.Moravsky, A.B.Ormont, and D.N.Zakharov.

"Neutron Spectroscopy of Fullerite Hydrogenated Under High Pressures". Physica B: Condensed Matter, v. 263--264, pp.436-8 (1999). A.I.Kolesnikov, V.E.Antonov, I.O.Bashkin, J.C.Li, A.P.Moravsky, E.G.Ponyatovsky and J.Tomkinson..

"Inelastic and Compton Neutron Scattering Study of Pristine Fullerite, Polymerized Fullerite and Hydrofullerite", 4th Int.Workshop Fullerenes & Atomic Clusters, St.Petersburg, Russia, Book of Abstracts, 1999, p.22. I.O.Bashkin, V.E.Antonov, A.I.Kolesnikov, J. Mayers, A.P.Moravsky, S.F.Parker, E.G.Ponyatovsky and J.Tomkinson..

"Magnetic Properties of High-Pressure Hydrogenated and Polymeric Fullerites", 4th Int.Workshop Fullerenes & Atomic Clusters, St.Petersburg, Russia, Book of Abstracts, 1999, p. 167. I.O. Bashkin, V.E. Antonov, A.P. Moravsky, Yu.G. Morozov, Yu.M. Shulga, Yu.A. Ossipyan and E.G. Ponyatovsky.

"Magnetic Properties of High-Pressure Hydrogenated and Polymeric Fullerites", Mol. Materials, v.13, No.1-4, 263-268 (2000). I.O. Bashkin, V.E. Antonov, Yu.A. Ossipyan , E.G. Ponyatovsky, A.P. Moravsky, Yu.M. Shulga and Yu.G. Morozov.

"A Dissolution-Precipitation Model for the Catalyst of SWNT Growth", 4th Int.Workshop Fullerenes & Atomic Clusters, St.Petersburg, Russia, Book of Abstracts, 1999, p.109. R.O.Loutfy, T.P.Lowe, J.L.Hutchison, N.A.Kiselev, D.N.Zakharov, A.V.Krestinin, E.P.Krinichnaya and A.P.Moravsky.

"A Parametric Study of Co/Ni Catalyst for SWNT Synthesis", 4th Int.Workshop Fullerenes & Atomic Clusters, St.Petersburg, Russia, Book of Abstracts, 1999, p.117, R.O.Loutfy, T.P.Lowe, J.L.Hutchison, N.A.Kiselev, D.N.Zakharov, E.P.Krinichnaya, V.E.Muradyan, B.P.Tarasov and A.P.Moravsky.

130. "Hydrogen Storage on Fullerenes: Catalytic Approach and Analysis", 4th Int.Workshop Fullerenes & Atomic Clusters, St.Petersburg, Russia, Book of Abstracts, 1999, p.226. R.O.Loutfy, E.M.Veksler, and A.P.Moravsky.

"Fullerene Black as a Catalyst for n-Alkane Conversions", 4th Int.Workshop Fullerenes & Atomic Clusters, St.Petersburg, Russia, Book of Abstracts, 1999, p.230. P.V.Fursikov, S.D.Kushch, V.E.Muradyan, G.I.Davydova, E.I.Knerelman and A.P.Moravsky.

"Platinum Fulleride Reduction by Molecular Deuterium or 9,10-Dihydroanthracene", 4th Int.Workshop Fullerenes & Atomic Clusters, St.Petersburg, Russia, Book of Abstracts, 1999, p.255. N.F.Goldshleger, B.P.Tarasov, Yu.M.Shulga, O.S.Roschupkina, A.A.Perov, A.V.Okotrub and A.P.Moravsky.

"Investigation of Fullerite-Deuterium Systems", 4th Int.Workshop Fullerenes & Atomic Clusters, St.Petersburg, Russia, Book of Abstracts, 1999, p.256. B.P. Tarasov, Yu.M.Shulga, V.N.Fokin, E.E.Fokina, A.P.Moravsky, D.V.Schur, S.Yu.Zaginaichenko and V.A.Yartys.

"Electrosynthesis of Fullerene Coatings on Carbon Fibres", 4th Int.Workshop Fullerenes & Atomic Clusters, St.Petersburg, Russia, Book of Abstracts, 1999, p.301. E.P.Krinichnaya, A.P.Moravsky, V.V.Strelets and O.N.Efimov.

"Carbon Nanotubes Production and Applications", 1999 US Army Sagamore Conference, Sagamore, Abstracts, p.26 (1999), R.O.Loutfy, A.P.Moravsky, T.P.Lowe, and J.C.Withers.

"Persistent Currents and Magnetic Flux Trapping in Fragments of Carbon Deposits Containing Multiwalled Nanotubes", JETP Letters., v.70, No.7, 462-468 (1999), V.I.Tsebro, O.E.Omelyanovskii, and A.P.Moravsky.

"Process for Producing a Superconductive Layered Material and Product Obtainable Therefrom", European Patent DC98039 (1999), Yu.A.Dubitsky, A.Zaopo, O.N.Efimov, and A.P.Moravsky.

"Scaled-Up Production of Carbon Nanotubes", Taiwan-Russian Hi-Tech Forum, Taipei, July 2000, Ext.Abstr., pp.51-73 (2000). A.P.Moravsky.

"Magnetic Properties of High Pressure Hydrogenated and Polymeric Fullerites", Molecular Materials, v.13, No.1-4, 263-268 (2000), I.O.Bashkin, V.E.Antonov, Yu.A. Ossipyan, E.G.Ponyatovsky, A.P.Moravsky, Yu.M. Shulga, and Yu.G. Morozov.

140. "Hydrogen in the Vibrational Spectra of High-Pressure Hydrofullerite", Molecular Materials, v.13, No.1-4, 251-256 (2000). I.O.Bashkin, V.E.Antonov, A.I.Kolesnikov, E.G.Ponyatovsky, J.Mayers, S.F.Parker, J.Tomkinson, A.P.Moravsky, and.Yu.M.Shulga.

"Fullerene Black as a Catalyst for n-Alkane Conversions", Molecular Materials, v.13, No.1-4, 319-324(2000). P.V.Fursikov, S.D.Kushch, V.E.Muradyan, G.I.Davydova, E.I.Knerelman, and A.P.Moravsky.

"Interaction of Hydrogen with Single-Walled Carbon Nanotubes Under High Pressure", Int.J. Alternative Energetics and Ecology, v.1, 134 (2000). I.O.Bashkin, V.E.Antonov, O.V.Boltalina, I.V.Goldt, A.F.Gurov, A.I.Kolesnikov, E.P.Krinichnaya, A.P.Moravsky, S.S.Khasanov, Yu.M.Shulga, and E.G.Ponyatovsky.

"Hydrogen Absorption by C_{60} and Carbon Nanotubes under High Pressure", 1st Int. Seminar on Safety and Economics of Hydrogen Transport, July 25-28, 2000, Sarov, Russia, Abstracts, p.34 (2000). I.O.Bashkin, V.E.Antonov, O.V.Boltalina, I.V.Goldt, A.F.Gurov, A.I.Kolesnikov, E.P.Krinichnaya, A.P.Moravsky, S.S.Khasanov, Yu.M.Shulga, and E.G.Ponyatovsky.

"Carbon Nanotubes and Nanofibres: Synthesis, Properties and Prospects for Applications", Russ.Conf. on Nanochemistry and Nanoparticles, Moscow, Abstr., p.5 (2000). B.P. Tarasov, Yu.M. Shulga, V.E. Muradyan, E.I. Krinichnaya, G.I. Zvereva, P.V.Fursikov, S.D.Kushch, O.V.Golodkov, A.G.Ryabenko, A.V.Krestinin, A.P.Moravsky, and O.N.Efimov.

"Graphite Oxide-based Nickel-Containing Catalysts for Reductive Dechlorination of Polychlorinated Aromatic Hydrocarbons", Russian Chemical Bulletin, No.6, 1023-1025 (2000). V.E.Muradyan, V.S.Romanova, A.P.Moravsky, Z.N.Parnes, and Yu.N.Novikov.

"Layered Materials by Electrochemical Deposition of Alkali Fullerides" Fullerene.Science and Technology, v.8, 17-25 (2000), Yu.A.Dubitsky, A.Zaopo, O.N.Efimov, Yu.V.Korneenkov, E.P.Krinichnaya, A.P.Moravsky, V.V.Strelets, and L.I.Tkachenko

"Carbon-Based Catalyst for C-C and C-H Bonds Activation", Russ.Patent (Pending), 2000. N.I.Burangulov, A.P.Moravsky.

"Fullerene-Based Filter for Cigarets", Russ.Patent Appl. 011045 (2000). N.I.Burangulov, A.P.Moravsky, P.A.Pogorelyi.

"Fullerene-Based Adsorbent for Clearing and Purification of Alcohol and Other Liquids", Russ.Patent Appl. 011046 (2000). N.I.Burangulov, V.N.Knyazev, V.V.Nesterov, A.P.Moravsky, and V.V.Sulima.

"Cosmetic Cream", Russ.Patent Appl. 011047 (2000). N.I.Burangulov, G.I.Dyachuk, V.N.Zgonnik, G.I.Mamleeva, A.P.Moravsky, P.A.Pogorelyi.

150. "Double-Walled Carbon Nanotubes and Methods of Production and Application", US Patent (Pending), 2000. A.P.Moravsky, R.O.Loutfy.

"Use of Fullerenes and Fullerene-Containing Materials in Catalysis: A Review", Petroleum Chemistry, v.40, 365-377 (2000), N.F.Goldshleger and A.P.Moravsky.

"Hydrogenation of Fullerite under High Hydrogen Pressures", Russ.Conf."Phase Transitions at High Pressures" , Abstracts, Chernogolovka, 2000, p.13/2. I.O.Bashkin, V.E.Antonov, A.F.Gurov, A.I.Kolesnikov, J.Meiers, A.P.Moravsky, C.F.Parker, E.G.Ponyatovsky, S.S.Khasanov, Yu.M.Shulga.

"Hydrogen Adsorption by Carbon Nanotubes Under 30 kbar Hydrogen Pressure", Russ.Conf."Phase Transitions at High Pressures" , Abstracts, Chernogolovka, 2000, p.13/4. I.O.Bashkin, V.E.Antonov, A.F.Gurov, E.P.Krinichnaya, A.P.Moravsky, E.D.Obraztsova and E.G.Ponyatovsky.

"Vibrational Spectra of C_{60} Polymer Phases Obtained Under Pressures to 55 kbar", Russ.Conf."Phase Transitions at High Pressures" , Abstracts, Chernogolovka, 2000, p.13/3. I.O.Bashkin, A.I.Kolesnikov, J.-Ch. Li, A.P.Moravsky, C.F.Parker, E.G.Ponyatovsky.

"Magnetic Ordering in Hydrofullerites Saturated with Hydrogen at High Pressures", Russ.Conf."Phase Transitions at High Pressures" , Abstracts, Chernogolovka, 2000, p.Y/2.V.E.Antonov, I.O.Bashkin, A.P.Moravsky, Yu.G.Morozov, Yu.A.Ossipyan, E.G.Ponyatovsky, S.S.Khasanov, Yu.M.Shulga.

"Magnetic Ordering in Hydrofullerite $C_{60}H_{24}$", Int. Symp. Metal-Hydrogen Systems: Fundamentals and Applications, October 1-6, 2000, Noosa, Queensland, Australia, Abstracts, p.56 (2000). V.E.Antonov, I.O.Bashkin, S.S.Khasanov, A.P.Moravsky, Yu.G.Morozov, Yu.M.Shulga, Yu.A.Ossipyan, and E.G.Ponyatovsky.

"Production and Characterization of Fullerene Hydrides", Ch. in: Encyclopaedia of Materials, Japan, 2001, R.O.Loutfy, A.P.Moravsky, E.M.Wexler.

"Dehydrogenation and Aromatization of Methane over Fullerene Catalysts", Neftekhimiya, (2001). P.V.Fursikov, S.D.Kushch, V.E.Muradian, Yu.V.Butenko, E.I.Knerelman, E.V.Koldasheva, V.L.Kuznetsov, A.P.Khrushch, A.P.Moravsky.

"Double-Walled Carbon Nanotubes Fabricated by Hydrogen Arc Discharge Method", Carbon, v.39, 761-770 (2001), J.L.Hutchison, N.A.Kiselev, E.P.Krinichnaya, A.V.Krestinin, R.O.Loutfy, A.P.Moravsky, V.E.Muradyan, E.D.Obraztsova, J.Sloan, S.V.Terekhov, D.N.Zakharov.

160 "Prospects of Fullerene Commercial Applications", Abstr. Int.Fullerene Workshop 2001, Tokyo, Japan, Mitsubishi Corp., p.47 (2001). R.O.Loutfy, J.C.Withers, T.Lowe, A.P.Moravsky, S.Dimitrievich, E.Veksler, M.Hecht, and A.Kolesnikov.

"Commercial Production of Fullerenes and Carbon Nanotubes", Proc. Int.Fullerene Workshop 2001, E.Osawa (Ed), Tokyo, Japan, Mitsubishi Corp., (2001), in the press. R.O.Loutfy, T.P.Lowe, A.P.Moravsky, and S.Katagiri.

"Principal Component Analysis of Fullerenes C_{76}, C_{78} and C_{84} Content Variability in Carbon Arc Soot Extracts", 5th Int.Workshop Fullerenes & Atomic Clusters, St.Petersburg, Russia, Book of Abstracts, 2001, p.111. A.P.Moravsky, A.G.Ryabenko, P.V.Fursikov, and A.A.Ryabenko.

"Magnetic Properties of Carbon Nanotubes Produced by Arc-Discharge Method at Different Conditions", 5th Int.Workshop Fullerenes & Atomic Clusters, St.Petersburg, Russia, Book of Abstracts, 2001, p.126. A.S.Kotosonov, D.V.Shilo, and A.P.Moravsky.

"Using Absorption Spectroscopy for Determination of SWNT", 5th Int.Workshop Fullerenes & Atomic Clusters, St.Petersburg, Russia, Book of Abstracts, 2001, p.205. A.G.Ryabenko, P.V.Fursikov, E.P.Krinichnaya, A.P.Moravsky, T.V.Dorofeeva, and G.I.Zvereva.

"BCC and FCC C_{60} Hydrofullerites after High-Pressure Synthesis", 5th Int.Workshop Fullerenes & Atomic Clusters, St.Petersburg, Russia, Book of Abstracts, 2001, p.241. I.O.Bashkin, V.E.Antonov, A.I.Harkunov, A.I.Izotov, S.S.Khasanov, V.I.Kulakov, A.P.Moravsky, Yu.A.Ossipyan, E.G.Ponyatovsky, Yu.M.Shulga, E.A.Shteinman, and L.V.Zorina.

"Fullerenes under High Hydrogen Pressure", VII Int. Conf. on Hydrogen Materials Science and Chemistry of Metal Hydrides (ICHMS'01), Sep.16-22, Alushta, Ucraine, Abstracts, p. 686-7 (2001). I.O.Bashkin, G.E.Abrosimova, V.E.Antonov, A.I.Harkunov, A.N.Izotov, S.S.Khasanov, V.I.Kulakov, A.P.Moravsky, Yu.A.Ossipyan, E.G.Ponyatovsky, Yu.M.Shulga, E.A.Shteinman, and L.V.Zorina.

"XRD Studies of Hydrofullerites Produced under High Hydrogen Pressure", 3rd Natl. Conf. on Application of X-Ray, Synchrotron, Neutron and Electron Spectroscopies for Materials Studies (RSNA), May 21, Moscow, Inst.Cryst. RAN, Abstracts, p.48 (2001). I.O.Bashkin, V.E.Antonov, L.V.Zorina, A.I.Izotov, V.I.Kulakov, A.P.Moravsky, Yu.A.Ossipyan, E.G.Ponyatovsky, A.I.Harkunov, S.S.Khasanov, E.A.Shteinman, Yu.M.Shulga.

"Study of Porous Structure, Density of Adsorbed Hydrogen in Carbon Nanomaterials and Its Electrochemical Generation, Adsorption-Desorption and Electrooxidation in These Materials", 5th Int.Workshop Fullerenes & Atomic Clusters, St.Petersburg, Russia, Book of Abstracts, 2001, p.286. Yu.M.Volfkovich, O.N.Efimov, B.P.Tarasov, A.Yu.Rychagov, E.P.Krinichnaya, V.E.Sosenkin, N.F.Nikolskaya, R.O.Loutfy, and A.P.Moravsky.

"Studies of Porous Structure and Electrochemical and Electroadsorption Properties of Carbon Nanotubes and Nanofibers", Abstr. 7th Int.Conf. Hydrogen Materials Science and Chemistry of Metal Hydrides (ICHMS'01), Crimea, Ukraine, 2001, pp.32-33. Yu.M.Volfkovich, O.N.Efimov, B.P.Tarasov, A.Yu.Rychagov, E.P..Krinichnaya, V.E.Sosenkin, N.F.Nikolskaya, R.O.Loutfy, and A.P.Moravsky.

170 "Electrochemical generation and oxidation of hydrogen in carbon nanomaterials of attested porous structure", Proceedings of International Workshop on Science and Application of Nanotubes, Germany, 22-25, 2001, Yu.M. Volfkovich, O.N. Efimov, B.P. Tarasov , A.Yu. Rychagov, E.P. Krinichnaya, V.E. Sosenkin, N.F. Nikolskaya , R.O. Loutfy A.P. Moravsky.

"Fullerenes and Fullerene-Containing Materials in Catalysis", Fullerene Science and Technology, No.3, 255 (2001).
N.F.Goldshleger, and A.P.Moravsky.

"Hydrogen-Containing Carbon Nanostructures: Synthesis and Properties" (Review), Russian Chemical Reviews, v.70, No.2, 131-146 (2001), B.P.Tarasov, N.F.Goldshleger, and A.P.Moravsky.

"ESR Study of Nanotubes and Nanoparticles Produced by Carbon Arc Technique under Various Helium Pressures", J.Experim.Theoret.Physics (Russ), 2001, in the press, A.S.Kotosonov, D.V.Shilo, A.P.Moravsky, and N.A.Kiselev.

"Platinum Fulleride Reduction by Molecular Deuterium or 9,10-Dihydroanthracene", Fullerene Science and Technology, v.8, No.6, pp. 519-529 (2000), N.F.Goldshleger, B.P.Tarasov, Yu.M.Shulga, O.S.Roschupkina, A.A.Perov, A.V.Okotrub, and A.P.Moravsky.

"Microwave Properties of Fullerene Black as Dependent of Conditions for Its Synthesis", Khimiya Vysokikh Energii, (Russ), 2001, in the press, E.A.Sokolov, S.D.Babenko, D.N.Zakharov, A.P.Moravskii, N.P.Piven, B.P.Tarasov, and P.V.Fursikov.

"Field Emission Display with Double-Walled Carbon Nanotube Emitters", Proceedings of 21st International Display Conference/ 8th International Display Workshops; 2001; pp.1245-1248, H.Kurachi, S.Uemura, J.Yotani, T.Nagasako, H.Yamada, T.Ezaki, T.Maesoba, R.Loutfy, A.Moravsky, T.Nakazawa, S.Katagiri, and Y.Saito.

"Field Emission from Double-Walled Carbon Nanotube Cathodes", Asia Display/ IDW'01, Proceedings of 21st International Display Research Conference/ 8th International Display Workshops; 2001; pp. 1237-1240, H.Kurachi, S.Uemura, J.Yotani, T.Nagasako, H.Yamada, T.Ezaki, T.Maesoba, R.Loutfy, A.Moravsky, T.Nakazawa, S.Katagiri, and Y.Saito.

"Electric Arc Synthesis of Carbon Nanotubes", Proceedings of the Conf. "Hydrogen Material Science and Chemistry of Metal Hydrides", Kiev, ADEF, 2001, 548-551. V.E.Muradyan, B.P.Tarasov, Yu.M.Shul'ga, A.G.Ryabenko, P.V.Fursikov, N.S.Kuyunko, A.P.Moravsky, S.V.Terekhov, S.N.Bokova, E.D.Obraztsova, S.Yu.Zaginaichenko, D.V.Shchur.

"Physical Hydrogen Storage on Nanotubes and Nanocarbon Materials", Perspectives of Fullerene Nanotechnology (Proc. Int.Fullerene Workshop 2001, Tokyo, Japan, Mitsubishi Corp.)., E.Osawa (Ed), Kluwer AP, Dordrecht, 2002, pp. 327-340, R.O.Loutfy, A.P.Moravsky, A.Franco, and E.M.Wexler.

180. "Nanotubes as Anode Material For Lithium-Ion Batteries", Perspectives of Fullerene Nanotechnology (Proc. Int.Fullerene Workshop 2001, Tokyo, Japan, Mitsubishi Corp.)., E.Osawa (Ed), Kluwer AP, Dordrecht, 2002, pp. 341-356, R.O.Loutfy, S.Hossain, A.P.Moravsky, and M.Saleh.

"Commercial Production of Fullerenes and Carbon Nanotubes", Perspectives of Fullerene Nanotechnology (Proc. Int.Fullerene Workshop 2001, Tokyo, Japan, Mitsubishi Corp.), E.Osawa (Ed), Kluwer AP, Dordrecht, 2002, pp. 35-48, R.O.Loutfy, T.P.Lowe, A.P.Moravsky and S. Katagiri.

"Magnetic Properties of Carbon Nanotubes Produced by the Arc-Discharge Method under Different Conditions", Physics of Solid State, vol.44, No.4, 666-667 (2002), A.S.Kotosonov, D.V. Shtilo, A.P. Moravskii.

"Magnetic Ordering in Hydrofullerite $C_{60}H_{24}$", Journal of Alloys and Compounds, No. 330-332, 365-368 (2002). V.E.Antonov, I.O.Bashkin, S.S.Khasanov, A.P.Moravsky, Yu.G.Morozov, Yu.M.Shulga, Yu.A.Ossipyan, and E.G.Ponyatovsky.

"Optical Properties of Carbon Nanotubes Filled with Fullerenes and Their Derivatives", 1st Seminar on Carbon Nanotechnologies, Abstracts, Moscow, 2002. A.G.Ryabenko, T.V.Dorofeeva, A.P.Moravsky, V.V.Roddatis, N.A.Kiselev.

"Field Emission Properties of Carbon Nanotubes Grown on Various Metal Substrates", 15th Int. Vacuum Microelectronics Conf. and 48th Int. Field Emission Symp., IVMC & IFES 2002, Lyon, France, July 7-11, Ext.Abstr. (2002). A.G. Chakhovskoi, N.N. Chubun, C.E.Hunt, R.O.Loutfy, A.P.Moravsky.

"Field Emisssion Characteriazation of Carbon Nanotubes Grown on Metal Substrates", Int. Conf." ", Austin, TX, (2003). A. Chakhovskoi, N. Chubun, R.Loutfy, A.Moravsky

"Isomer Structure of High-Pressure Hydrofullerene Probed by Soft X-Ray Emission", Journal of Molecular Structure (Theochem), v.639, No.1-3, 27-33 (2003). E.Z.Kurmaev, A.Moeves, T.Ida, S.Danielache, K.Endo, I.O.Bashkin, A.I.Harkunov and A.P.Moravsky.

"Thermally Stable Hydrogen Compounds of Carbon Nanotubes and Nanofibers Obtained Under High Pressure", JETP Letters, v.79, 280-285 (2004). I.O.Bashkin, V.E.Antonov, A.V.Bazhenov, I.L.Bdikin, D.N.Borisenko, E.P.Krinichnaya, A.P.Moravsky, A.I.Kharkunov, Yu.M.Shulga, Yu.A.Ossipyan, and E.G.Ponyatovsky.

"Anomalously Soft Dynamics of Water in a Nanotube: A Revelation of Nanoscale Confinement", Phys. Rev. Lett., v.93, 035503-035507 (2004), A.I.Kolesnikov, J.-M.Zanotti, C.-K.Loong, P.Thiyagarajan, A.P.Moravsky, R.O.Loutfy, C.J.Burnham.

190. "Anomalously Soft Dynamics of Water in a Nanotube: A Revelation of Nanoscale Confinement", Virtual J. Nanoscale Science and Technology, http://www.vjnano.org, July 26 (2004)., A.I.Kolesnikov, J.-M.Zanotti, C.-K.Loong, P.Thiyagarajan, A.P.Moravsky, R.O.Loutfy, C.J.Burnham.

"Carbon Nanotubes Full of Water", Chemical & Engineering News, v.82, No.26, p.13 (2004). M.Jacoby: A.I.Kolesnikov, J.-M.Zanotti, C.-K.Loong, P.Thiyagarajan, A.P.Moravsky, R.O.Loutfy, C.J.Burnham.

"Small Ice", Ice and Icy Particles Workshop, Telluride, Yuly 2004, p.13. C.J.Burnham, A.I.Kolesnikov, J.-M.Zanotti, C.-K.Loong, P.Thiyagarajan, A.P.Moravsky, R.O.Loutfy.

"Mechanism of Carbon Transfer in the Arc Synthesis of DWNTs", 5th Int.Conf.Sci.Appl.Nanotubes NT'04, Mexico, Abstr., p.62 (2004). A.P.Moravsky, R.O.Loutfy.

"Carbon Nanotubes as Thermionic Emitters", 5th Int.Conf.Sci.Appl.Nanotubes NT'04, Mexico, Abstr., p.217 (2004). R.O.Loutfy, M.Samandi, A.P.Moravsky, S.Strange.

"Composition of the Extracts of Fullerene Soot Obtained in the Arc Discharge Reactor", Zh. Fiz. Khimii, v.78, No.4, 1-8 (2004). A.G.Ryabenko, V.I.Kozlovskii, A.P.Moravsky, A.A.Ryabenko, P.V.Fursikov.

"Mass-Spectral Study of Fullerenes C76 and C84 Evolution in the Arc Synthesis", Zh. Fiz. Khimii, (2004). A.G.Ryabenko, V.I.Kozlovskii, A.P.Moravsky, A.A.Ryabenko, P.V.Fursikov.

"Laser Desorption and Electro-Spray TOF MS Studies of Hot Fullerenes C_{78} and C_{84} Reactions", Mass-Spectroscopiya, v.1, No.2, 135-142 (2004). V.I.Kozlovskii, A.G.Ryabenko, A.P.Moravsky, M.F. Budyka.

"Raman Studies of Natural and Synthetic Carbons", VII Conf. "Analitica Sibiri I Dalnego Vostoka", Oct.11, 2004, Abstr., Novosibirsk, 12 (2004), T.N.Moroz, A.G.Ryabenko, V.G.Kostrovskii, S.M.Zhmodik, A.G.Mironov, A.P.Moravsky, A.M.Spiridonov.

"Carbon Micro- and Nanotubes synthesized by PE-CVD Technique: Tube Structure and Catalytic Particles Crystallography", Carbon, V.42, No.1, 149-161 (2004). N.A.Kiselev, J.L.Hutchison, A.P.Moravsky, E.V.Rakova, E.V.Dreval, C.J.D. Hetherington, D.N.Zakharov, J.Sloan, R.O.Loutfy.

200. "Spectrophotometry and Electron Microscopy of SWNTs filled with C_{60}, C_{70} and $C_{60}H_{28}$ molecules", Conf. "Nanodimensional Systems (NANSYS), Oct.12, 2004., Kiev, A.G.Ryabenko, N.A.Kiselev, J.L.Hutchison, A.P.Moravsky

"Studies of Internal Fillers Influence on Spectral Properties of SWNTs", 3rd Int. Conf. "Carbon: Fundamental Problems of Science, Materials and Technology", Oct.13-15, Moscow, Abstracts, p.197 (2004). A.G.Ryabenko, T.N.Moroz, V.G.Kostrovsky, S.S.Bukalov, N.A.Kiselev, J.L.Hutchison, A.P.Moravsky

"Electrochemical Polymerization of C_{60} Induced by Superoxide Radical Anion, O_2^-". Int. Society of Electrochemistry, 55th Annual Meeting, Thessaloniki, Greece, 19-24 September 2004, paper S10FP60. E.P.Krinichnaya, A.P.Moravsky, O.Efimov, K.Winkler, J.W.Sobczak, W.Kutner, A.L.Balch.

"Mechanistic Studies of the Electrochemical Polymerization of C_{60} in the Presence of Dioxygen or $C_{60}O$", Abstracts of the 10th Int. Conf. on Electroanalysis of the European Society for ElectroAnalytical Chemistry, ESEAC 2004, Galway, Ireland, June 6-10, 2004, p.123. Elena P. Krinichnaya, Alexander P. Moravsky, Oleg Efimov, Janusz W. Sobczak, Krzysztof Winkler, Wlodzimierz Kutner, and Alan L. Balch.

"Mechanistic Studies of the Electrochemical Polymerization of C_{60} in the Presence of Dioxygen or $C_{60}O$", Journal of Materials Chemistry, 2005, v.15, 1468-1476, E.P.Krinichnaya, A.P.Moravsky, O.Efimov, Ja.W. Sobczak, K.Winkler, W.Kutner, A.L.Balch.

"Neutron Spectroscopy of Carbon Nanomaterials". Proc. MRS Fall Meeting, Symp.Q, paper Q2.3, 2004. A..I. Kolesnikov, C.-K. Loong, A.P. Moravsky, R.O. Loutfy, C.J.Burnham.

"Inelastic neutron scattering study of carbon nano-materials", 8th Int. Conf.on Applications of Diamond and Related Materials/1st NanoCarbon Joint Conference, Argonne National Laboratory, Abstract p.123, May 15-19, 2005. A..I. Kolesnikov, C.-K. Loong, A.P. Moravsky, and R.O. Loutfy.

"Anomalously Soft Dynamics of Water in Carbon Nanotubes", International Conference on Neutron Scattering ICNS2005, Abstr.No 326, 2005, pp.101-103, A.I.Kolesnikov, C.-K.Loong, N.R. de Souza, C.J.Burnham, A.P.Moravsky.

"Growth of Carbon Nanotubes by Arc Discharge and Laser Ablation", Ch.3 in the book "Carbon Nanotube Science and Applications", CRC Press, Ed. M.Meyyappan, 2005, pp.65-97. A.P.Moravsky, E.M.Wexler, R.O.Loutfy.

"Mechanism of the Arc Synthesis of DWNTs", 2nd NASA/Rice University Workshop on SWNT Nucleation and Growth Mechanism, Guadalupe River Ranch, Boerne, Texas, 8-12 April 2005, Abstracts, p.53. A.P.Moravsky, R.O.Loutfy, T.P.Lowe.

210. "Hydrogenated Single-Walled Carbon Nanotube Material as a Cold-Neutron Moderating Medium", Proceedings of ICANS-XVII, 17-th Meeting of the International Collaboration on Advanced Neutron Sources, April 25-29, 2005, Santa Fe, New Mexico, p. 311-317. C.-K.Loong, A.I.Kolesnikov, N.R. de Souza, J.M.Carpenter, I.O.Bashkin, I.V.Kondratieva, L.H.He and A.P.Moravsky.

"Fluid Ice in Carbon Nanotubes", 6th Int.Conf.Sci.Appl.Nanotubes NT'05, Sweden, Abstr., p.66 (2005). A.I.Kolesnikov, C.J.Burnham, C.-K.Loong, N.R. de Souza, A.P.Moravsky and R.O.Loutfy.

"Neutron Spectroscopy of Water in Carbon Nanotubes", 2nd Workshop on Inelastic Neutron Spectrometers 2005, WINS2005, Abstracts, Dec.5, Cairns, Australia, A.I.Kolesnikov, C.-K.Loong, C.J.Burnham, N.R. de Souza, G.Reiter, J.Mayers, A.P.Moravsky and R.O.Loutfy.

"Evolved Gas Analysis of Heat-Treated Carbon Nanomaterials", MRS Autumn Meeting 2005, Boston, Yu.M.Shulga, V.M.Martynenko, R.O.Loutfy, A.P.Moravsky.

"Evolved Gas Analysis of Heat-Treated Carbon Nanomaterials", Mater.Res.Soc.Symp.Proc. Vol.885E, pp.0885-A09-34.1 - 0885-A09-34.6 (2006). Yu.M.Shulga, V.M.Martynenko, R.O.Loutfy, A.P.Moravsky.

"Bulk Production of a Strong Covalently Linked $(C_{60}H_x)_2$ Dimer", J. Phys. Chem. B., v. 109 (24), 11875-11879 (2005). Yu.V.Vasil'ev, S.G.Kotsiris, I.O.Bashkin, V.E.Antonov, A.P.Moravsky and T.Drewello.

"High-pressure hydrofullerites: Evidence for a covalently linked $C_{60}H_{36}$ dimer". MRS Meeting (2005), Boston. Yury V. Vasiliev, Sotirios G. Kotsiris, Igor O. Bashkin, Vladimir E. Antonov , Alexander P. Moravsky and Thomas Drewello.

"Synthesis of Bamboo-like Nanofibers on Si/TiNx supported Fe-Mo Catalyst", IWFAC' 2005, Abstract P252, St.Petersburg, p.317, A.A.Volodin, P.V.Fursikov, B.P.Tarasov, O.N.Efimov, Yu.M.Shul'ga, N.I.Shuvalova, Yu.A.Kasumov, A.A.Pasynsky and A.P.Moravsky.

"Kinetics of the Arc Synthesis of DWNTs", IWFAC' 2005, Abstract P163, St.Petersburg, p.317, A.P.Moravsky, R.O.Loutfy.

220. "Electrochemical Modification of Nanocarbon Coatings", Alternative Energetics and Ecology, vol.1, No.1, 123 (2005). O.N.Efimov, E.P.Krinichnaya, V.V.Strelets, L.I.Tkachenko, E.V.Ovsyannikova, N.M.Alpatova, A.P.Moravsky, R.O.Loutfy.

"Cosmetic Compositions Containing Fullerene Clusters", Patent Applications: US 2005/0136079 A1; WO2006001784 A1; JP2006528204 T; EP1653920 (A1) ; CN1832719 (A); CA2554799 (A1). N.I.Burangulov, A.P.Moravsky, Yu.V.Kulikova, G.I.Dyachuk, R.O.Loutfy.

"Water in Carbon Nanotubes: Neutron Spectroscopy and MD Simulations", IPNS ANL, 25-th Anniversary Progress Report, May 2006. A.I.Kolesnikov, C.-K.Loong, N.R.deSouza, P.Thiyagarajan, C.J.Burnham, A.P.Moravsky, J.-M.Zanotty.

"Dynamics of water confined in single- and double-wall carbon nanotubes", J. Chem. Phys., v.124, 194703-1 - 194703-6 (2006). E. Mamontov, C. J. Burnham, S.-H. Chen, A. P. Moravsky, C.-K. Loong, N. R. de Souza, and A. I. Kolesnikov

"XPS Study of Fluorinated Multi-Walled Carbon Nanotubes", J.Electron Spectroscopy and Related Phenomena, 2006. Y.M. Shulga, Ta-Chang Tien, Chi-Chen Huang, Shen-Chuan Lo, V.E. Muradyan, N.V. Polyakova, Yong-Chien Ling, R.O.Loutfy and A.P.Moravsky.

"RF Plasma Method for Production of Single Walled Carbon Nanotubes", US Patent No. US 7,052,667 B2 of May 30, 2006, to R.O.Loutfy, A.P.Moravsky, T.P.Lowe.

"Double-Walled Carbon Nanotubes and Methods for Production and Application", Korean Patent No. 10-0604459, Registered Jul.18, 2006, Patent allowed May 16, 2006, Appln. No. 7012344/2002, Filed Sep.18, 2002, Priority of Oct. 6, 2000. Issued to: A.P.Moravsky and R.O.Loutfy.

"Anomalously Soft Dynamics of Water in Carbon Nanotubes", Physica B: Physics of Condensed Matter, v.385-386, 272-274 (2006); A.I.Kolesnikov, C.-K.Loong, N.R. de Souza, C.J.Burnham, A.P.Moravsky.

"Dielectric Properties of Carbon Nanotube – Epoxy Composites in UHF Range", 4th Int. Conf. "Carbon: Fundamental Problems of Science, Materials and Technology", Oct.13-15, Moscow, Abstracts, p.78 (2006). V.E.Muradyan, E.A.Sokolov, S.D.Babenko, A.P.Moravsky, G.A.Nikolaeva.

230. "Anomalous Behavior of Proton Zero Point Motion in Water Confined in Carbon Nanotubes", Phys. Rev. Lett., v.97, 247801-247804 (2006). G. Reiter, C. Burnham, D. Homouz, P.M. Platzman, J. Mayers, T. Abdul-Redah, A.P.Moravsky, J.C. Li, C.-K. Loong and A.I.Kolesnikov.

"Water in Carbon Nanotubes Is Not the Same Old Stuff", Nature, in press, G.Reiter, D.Homouz, C.Burnham, P.M.Platzman, J.Mayers, T.Abdul-Redah, A.P.Moravsky, J.C.Li, C.-K.Loong, A.Kolesnikov.

"Water in Carbon Nanotubes Is Not the Same Old Stuff", Materials Science (Cond-mat.mtrl-sci), arXiv: cond-mat/0601072v1, G.Reiter, C.Burnham, D.Homouz, P.M.Platzman, J.Mayers, T.Abdul-Redah, A.P.Moravsky, J.C.Li, C.-K.Loong, A.Kolesnikov.

"Dielectric Properties of Carbon NanoFiber Composites in UHF Range", Abstr. 4th Russian Conf. Irreversible Processes in Nature and Technique, Moscow, Jan. 29-31, p.28, (2007). V.E.Muradyan, E.A.Sokolov, S.D.Babenko, A.P.Moravsky, G.A.Nikolaeva.

"Spectral Properties of Single-Walled Carbon Nanotubes Encapsulating Fullerenes", Carbon v.45, No.7, 1492-1505 (2007). A.G. Ryabenko, N.A. Kiselev, J.L. Hutchison, T.N. Moroz, S.S. Bukalov, L.A. Mikhalitsyn, R.O. Loutfy, A.P. Moravsky.

"Observation of a Dynamic Crossover in Water Confined in Double-Wall Carbon Nanotubes", Phys.Rev.E, xxx(2007)xxx-xxx. X.-Q. Chu, A. I. Kolesnikov, A. P. Moravsky, V. Garcia-Sakai, and S.-H. Chen.

"Neutron Spectroscopy Study of Single-Walled Carbon Nanotubes Hydrogenated under High Pressure", J. Alloys and Compounds, v.446-447, 389-392 (2007). A.I.Kolesnikov, I.O.Bashkin, V.E.Antonov, D.Colognesi, J.Mayers, A.P.Moravsky.

"Properties of Highly-Loaded Thin Walled CNT Polymer Matrix Composites", Manufacturing/Processing Issues for Multifunctional Composite Structures, Workshop, Abstracts, p.12, Univ. of Washington, Seattle, (2007). R.O.Loutfy, A.P.Moravsky, L.Wu, R.Hijazi, T.Murphey, J.Banik.

"Dielectric Properties of Epoxyamine Composites by Modified Carbon Nanofibers in Microwave Range", ICHMS'2007, Hydrogen Materials Science and Chemistry of Carbon Nanomaterials, 10-th International Conf., Sudak, Crimea, pp.426-429 (2007). V.E.Muradyan, E.A.Sokolov, S.D.Babenko, A.P.Moravsky, G.A.Nikolaeva

"Dielectric Properties of Epoxy Composites Based on Carbon Nanotubes in Microwave Range", Technical Physics V.E.Muradyan, E.A.Sokolov, S.D.Babenko, A.P.Moravsky

"Nature of the bound states of molecular hydrogen in carbon nanohorns", Physical Review Letters 98, 21, 25/05/2007.Felix Fernandez-Alonso (ISIS), F. Javier Bermejo, Carlos Cabrillo, Raouf O. Loutfy, Vincent Leon (CRMD), Marie-Louise Saboungi (CRMD)

240. "Benzene Confinement in Single-Walled Carbon Nanotubes: Inelastic and Quasielastic Neutron Scattering", 2008 APS March Meeting Abstract R1.00344, N.R. de Souza, A.I. Kolesnikov, N. Verdal, A.P. Moravsky

"Double-Walled Carbon Nanotubes under Hydrostatic Pressure: Raman Experiments and Simulations", J. Nanoscience and Nanotechnology, v.7, 1753-1759 (2007). V.Gadagkar, S.Saha, D.V.S.Muthu, P.K.Maiti, Y.Lansac, A.Jagota, A.Moravsky, R.O.Loutfy, A.K.Sood

"Ultrafast Electron Dynamics and Cubic Optical Nonlinearity of Free Standing Thin Film of Double Walled Carbon Nanotubes, Applied Physics Letters, 9, 93, (2008). N.Kamaraju, Sunil Kumar, B.Karthikeyan, Alexander.Moravsky, R.O.Loutfy and A.K.Sood.

"Anomalous Behavior of Dielectric Permittivity of Nanocarbon Composites in UHF Range", 5th Conference on Irreversible Processes in Nature and Technique, Moscow, Abstr., pp.63-66 (2009). V.E.Muradian, E.A.Sokolov, C.D.Babenko, and A.P.Moravsky.

"Terahertz Time Domain Spectroscopy of Low Frequency Vibrations of Double Walled Carbon Nanotubes", European Journal of Inorganic Chemistry, 2010. Sunil Kumar,[a] N. Kamaraju,[a] A. Moravsky,[b] R. O. Loutfy,[b] M. Tondusson,[c] E. Freysz[c] and A. K. Sood

"A Multi-Scale Study of High Performance DWNT-Polymer Fibers", Advanced Functional Materials, 2010. M.Naraghi, T.Filleter, A.Moravsky, M.Locascio, R.O.Loutfy, H.D.Espinosa.

"Probing Deformation of Double-Walled Carbon Nanotubes (DWNT)/Epoxy Composites Using FTIR and Raman Techniques". Composites Science and Technology, 2010. Scott R. Brownlow, Alexander P.Moravsky, Nikolai G. Kalugin, Bhaskar S. Majumdar.

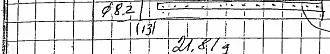
"Deformation Mechanisms in Carbon Nanotube/Epoxy Composites", TMS Annual Meeting (2010), Symposium Proceedings: "Commonality of Phenomena in Composite Materials II", Scott Brownlow, Alexander Moravsky, Bhaskar Majumdar.

EXHIBIT 2

Run CF39

H_2 175 Torr (600 sccm) + Ar 125 Torr (200 sccm) = 350 Torr

Rod: l202 (8") I81A v 2.0 mm/min



Chin Cat Composition	51.05%	Ni
	13.8	Co
	27.1	Fe
	8.05	S

21.81 g
16.66
5.15 g (4:1 = M : Graph)
↳ 4.12 g M + 1.03 g C

Steady-state vaporization found at U 26÷28 V at I81 ← v 2.0

Composition of the rod:

$\Sigma C = 16.65 - 1.3 + 1.03 = 16.4 g$; $\Sigma C+M = 20.52$ Cheng

Ni = 2.103 g ⇒ $\frac{2.103}{16.4} \cdot \frac{12}{58.69}$ =	2.62 at% = 10.26 wt%	2.6
Co = 4.12 · 0.138 ⇒ =	0.706 at% = 2.77 wt%	0.7
Fe = 4.12 · 0.271 = 1.116	1.46 at% = 5.44 wt%	1.45
S = 4.12 · 0.0805 = 0.333	0.76 at% = 1.62 wt%	0.25

Total burning 45 min

Product: 1.17 g WS: pWS 0.45 g MG/B: passes sieve
0.22 g sieved powder
Deposit + Junk 12.4 g ? left: crispy powder, burned webs
Sieved 2.8 g
Rod Remainder 1.6 g

SEM pWS : Curly bundles ϕ~100 nm embedded in amorph, very long (> 5÷10 μm)

TEM : Thin bundles of 5-20 tubes & some separate thick tubes of ~4-5 nm ϕ
Most of tubes have 2 walls!
Some are SWNTs (thick ϕ~4÷5 nm)
(The system selectively produces double-walled nanotubes in abundance!)

A. Ukoratsky

Read & Understood
Lowe

EXHIBIT 3

TEM image of the product of Run CF39

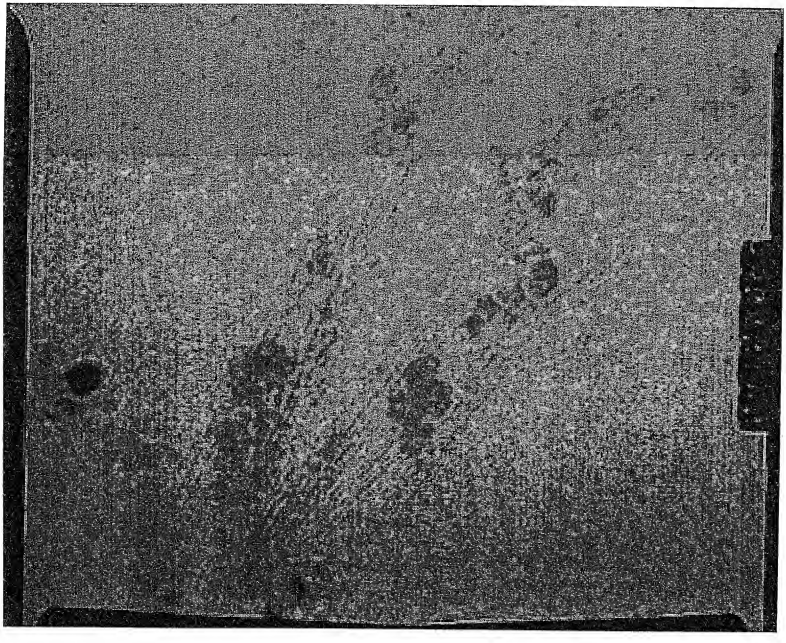


EXHIBIT 4

TEM image of the product of Run CF39

EXHIBIT 5

TEM image of the product of Run CF39

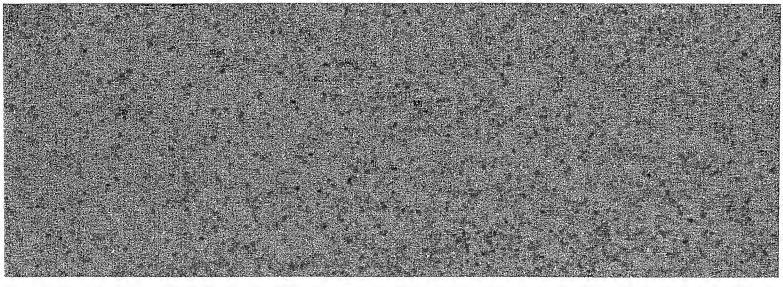


EXHIBIT 6

TEM image of the product of Run CF39

EXHIBIT 7

TEM image of the product of Run CF39

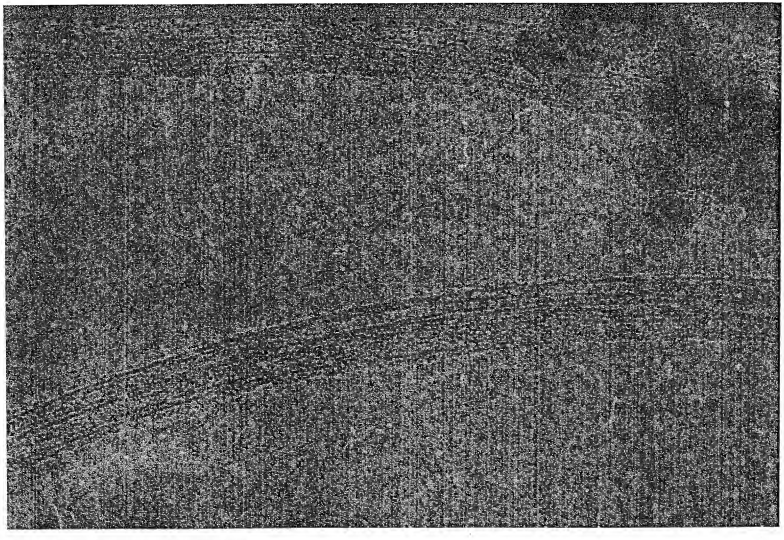


EXHIBIT 8

TEM image of the product of Run CF39

EXHIBIT 9

Message for Dr.A.P.Moravsky

Subject: **Message for Dr.A.P.Moravsky**
Date:
From: "Elena P. Krinichnaja" <elkrina@icp.ac.ru>
Organization: IPCP
To: "moravsky@Opus1.com" <moravsky@Opus1.COM>

Саша, здравствуй!
ТЭМ (кобальт, никель, железо и сульфид железа) - двухслойные нанотрубки, диаметр 3.5-5.2 нм, расстояние между стенками 0.42+/-0.02 нм. Внутренние каналы нанотрубок частично заполнены, по всей видимости, аморфным углеродом. Помимо нанотрубок и каталитических частиц в образце присутствуют различные формы углерода, структура которых на данный момент времени не анализировалась.
Елка.
П.С. Ты когда-нибудь ответишь мне?

EXHIBIT 10

E-mail message for Dr. A.P.Moravsky from Dr.E.P.Krinichnaja

Translation into English

Hello, Alex!

TEM (cobalt, nickel, iron and iron sulfide catalyst) has shown: double-walled nanotubes of 3.5 – 5.2 nm diameters, with the distance between the walls 0.42 +- 0.02 nm. Internal channels of nanotubes are partially filled, most likely, with amorphous carbon. Besides the nanotubes and catalytic particles, there are present various forms of carbon with the structure that was not yet analyzed.

Elena.

P.S. Waiting for your reply.